



Doing What Works

ED.gov



Video

FULL DETAILS AND TRANSCRIPT

Key Messages of the Panel Report

Larry R. Faulkner, Ph.D. • June 2008

Topic: National Math Panel: Critical Foundations for Algebra

Highlights

- Overview of the Panel and how it differs from similar groups chartered to look at mathematics education
- Key messages and recommendations
- How the research findings relate to educators
- Explanation of why it's important to teach fewer topics focused on the critical foundations
- The need for simultaneously teaching conceptual understanding, computational fluency, and problem-solving skills
- Importance of teachers laying the foundation for students to succeed in algebra
- Key messages for teachers in the areas of content, learning processes, and instructional practices
- The role of effort in learning mathematics
- How teachers can use the Panel's findings to inform instructional practice

About the Interviewee

Larry R. Faulkner, Chair, National Mathematics Advisory Panel and Member, Conceptual Knowledge and Skills Task Group. He is also President of Houston Endowment, a private philanthropy established by Jesse H. and Mary Gibbs Jones. He is also President Emeritus of The University of Texas at Austin. Dr. Faulkner served on the chemistry faculties of Harvard University, the University of Illinois, and the University of Texas. At Illinois, he was also department head, dean, and provost. From 1998 into 2006, he served the University of Texas as its 27th president. He is a member of the American Academy of Arts and Sciences and recently chaired the National Mathematics Advisory Panel. He now serves on the boards of Exxon Mobil, Guaranty Financial Group, and Temple-Inland, and was previously on the boards of Sandia National Laboratories and Internet2.

Full Transcript

I am Larry Faulkner, President of Houston Endowment and Chair of the National Mathematics Advisory Panel.

The Panel was charged by the President of the United States in an executive order. We were created by the President to, essentially, look into the best available scientific evidence relating to the preparation of students to enter into and to succeed in algebra. We are about mathematics education in the years leading into algebra, that is, pre-K up to about the eighth grade. This Panel differs from other committees or groups that have been chartered to look at math education historically, in that it has had a very strong focus on what the scientifically generalizable evidence can tell us. This Panel has encompassed the full scope of educational philosophies. We have members who cover the full spectrum. And people approach the issue of educating children in mathematics, instinctively anyway, from radically different directions, but they have converged in this effort on an agreement that what we would do is look at what the real, and strong, and defensible scientific studies tell us about mathematics education. Our hope is that the findings that we have communicated will be used by schools and school leaders and teachers to improve the education of young people so that they can then succeed in algebra. Algebra, in turn, is, I think, an important goal for the nation to focus on. Our children aren't succeeding as well as they need to by worldwide standards, and it turns out that algebra is in a central position in the curriculum. It has a lot to do with how far children can take their education overall, not only in secondary school, but beyond secondary school. As teachers approach the Math Panel's report, I think it's important to recognize that there aren't details here about exactly how to carry out a given instructional practice. But there is general advice on how instructional practices can succeed, better ones for better situations, and there is quite a bit here about how children learn mathematics that can inform the way teachers develop their own pattern of instruction and approach to students.

The messages that are most important to the teachers in this report, come in several areas: in the area of content, in the area of learning processes, in the area of instructional practices especially. Perhaps the

largest message from this Panel is that the nation needs to teach fewer things in these years leading up to algebra and do a fuller job of the ones that are taught. And we lay out specific items—the things we call the critical foundations—and we lay out some benchmarks and general ages by which students ought to have reached certain levels of attainment. There is a strong message that fractions need stronger emphasis than we have been giving it nationally; teachers can look at what they are doing. There is also a pretty strong message that we have a habit in this country of revisiting topics year after year without closure. There is a strong emphasis on getting away from that, on getting to closure as we begin a topic. In one year, we may need to close it out in that year or the next year. Teachers are going to need to collaborate with each other at crossing great boundaries and so forth and try to work more effectively.

In the area where—of messages that relate to how children learn, there are some really important messages for teachers there. To begin, there is one about the importance of carrying in parallel the mastery of computational facility, understanding of number operations and what they mean, the conceptual part, and the application of all of that to problem solving. The Panel found that these three things need to be carried in parallel. Still another message that I think that we want to be sure the teachers understand has to do with importance of effort. There is a cultural tendency in America for us to give up easily on mathematics, and the Panel has the sense that this cultural tendency is rooted in a view in the nation that mathematics is really a matter of talent—you either have it or you don't—and that's actually not supported by research. Research shows that if students believe that working at their mathematics will make them smarter in mathematics, that they actually do achieve and eventually reach higher levels of proficiency.

In instructional practices, there are actually a host of messages for teachers in the instructional practices areas. There are things that are in the report about methods that are effective with learning disabled or slow learners. There are messages in there that have to do with gifted children. There are messages about the effectiveness of formative assessment. A message that we really want to convey is that teachers at all levels are laying the foundation for children to succeed in algebra. A teacher can be a tremendously beneficial force as a child approaches the subject of mathematics. So, I do want to say to teachers who may be watching this video, that what you do is of tremendous value and importance to the development of children and their preparation for entry ultimately into a higher-level mathematical experience.